

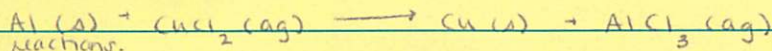
Chpt 8 HW ? 254 Q5
 264 Q 2,4
 267 Q 2,3
 269 Q 1
 270 Q 20,21,24
 271 Q 30,35
 272 Q 37 a & b

yay chemistry!

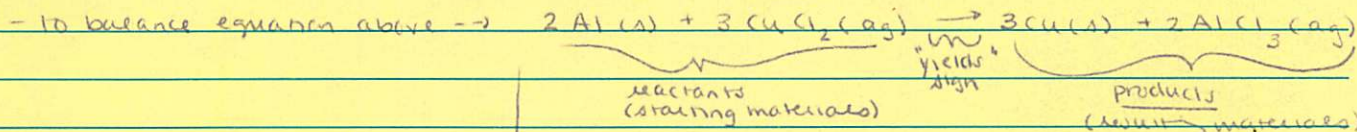
02-13-06

"Chpt 8 Test starts here!"

Chpt 8: Chemical Equations & Reactions



* All atoms, LCA (matter can not be made or destroyed by ordinary means)



called a formula equation (shows reactants & products as formulas)

word equation

aluminum reacts with copper (II) chloride yielding copper metal & aluminum chloride.
 (shows reactants & products as words)

* Ions \rightarrow to the max!

* ways to interpret formulas...



\rightarrow coefficients \rightarrow 2 atoms Al + 3 on CuCl₂ \rightarrow 3 atoms Cu + 2 on AlCl₃
 rel. no

1000 small! ... cooler to work in mols

1 mols \rightarrow 2 mols Al + 3 mol CuCl₂ \rightarrow 3 mol Cu + 2 mol AlCl₃ [basis for chpt 9]

Symbols for equations

- (s) - solid
- (l) - liquid
- (g) - gas
- (aq) - aqueous (water based / dissolved in H₂O)
- (ppt), \downarrow - precipitate [strictly on product side]
- \uparrow - gas is being released

chem. reaction is taking place if ... 1) color change (not explicit) 2) ~~temp~~ \uparrow is being changed
 3) ppt. formed 4) a gas is released.

* Dirg. yield signs

\longrightarrow yield

\triangle
 \longrightarrow heat added

$\xrightarrow[\text{mno}_4]{\text{Pt}}$ } a catalyst is used

Rules for Balancing

* can NOT change subscripts when they have been set

1) (only applies to word equations) make sure all formulas are correct & all diatomic elements [is ALONE] are made diatomic.

ex chlorine \rightarrow Cl₂ vs ex. potassium chloride \rightarrow KCl

2) Balance everything except H & O w/ coefficients

- treat polyatomics as 1 thing

3) Balance H

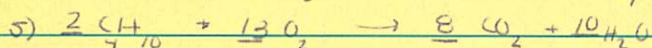
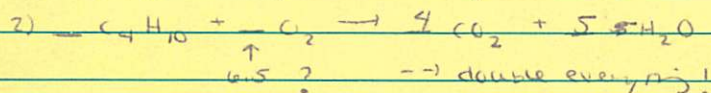
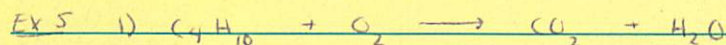
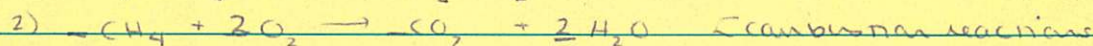
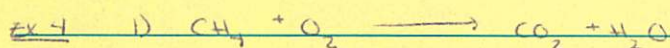
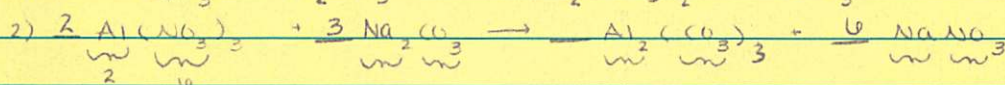
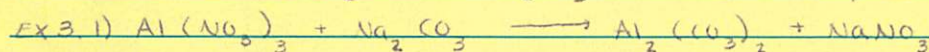
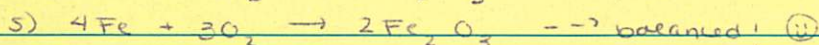
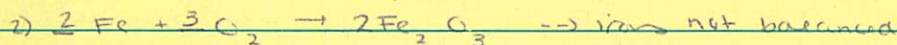
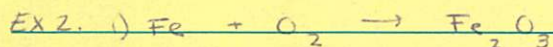
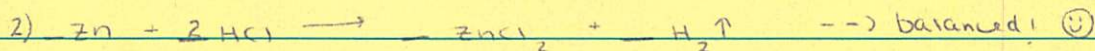
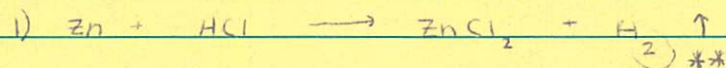
4) Balance O

5) check work!

02-13-06, ~~just~~ zinc, not ion!

Chpt 8 Cont.

Ex. Zinc plus hydrochloric acid yields zinc chloride + hydrogen gas.
(metal + acid + always releases H gas!)



02-14-06

Types of Reactions

• Synthesis Rxn: $\text{A} + \text{X} \longrightarrow \text{AX}$

- two elements $\rightarrow 2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$

$\rightarrow 2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$

- metal oxide + H_2O (will make hydroxides)

$\rightarrow \text{MgO} + \text{H}_2\text{O} \rightarrow \text{Mg}(\text{OH})_2$

- nonmetal oxide + H_2O (make acids)

$\rightarrow \text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{CO}_3$

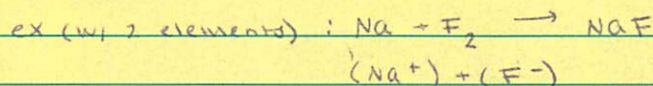
x ions!!

02-27-06

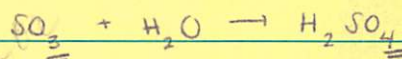
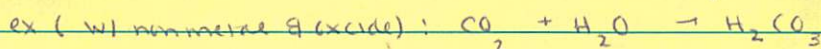
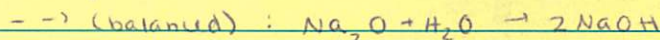
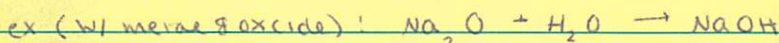
Types of Reactions

• Synthesis : $A + X \rightarrow AX$

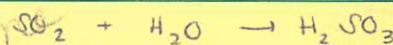
* Ions!



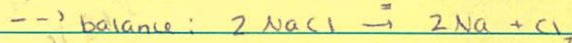
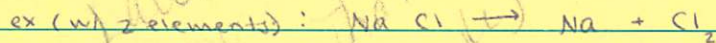
* then balance out equal $\rightarrow 2Na + F_2 \rightarrow 2NaF$



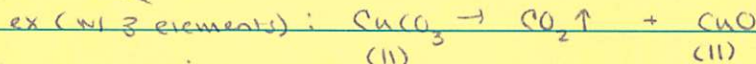
metal oxide + makes
 sulfuric acid
 dioxide makes
 sulfurous acid



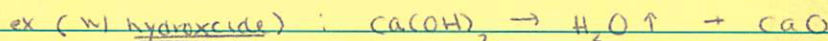
• decomposition : $AX \rightarrow A + X$



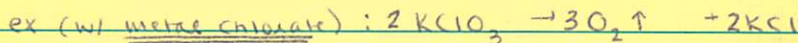
\rightarrow breaks down to form respective elements.



* always
 carbonates
 $\xrightarrow{\Delta}$



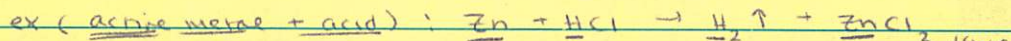
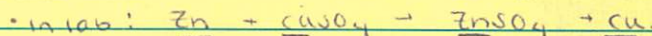
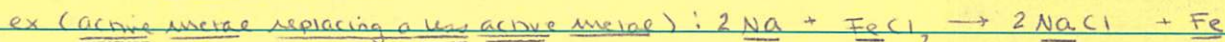
\rightarrow water + metal oxide



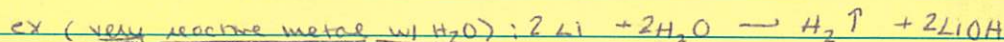
\rightarrow oxygen gas + metal chloride

• single replacement : $A + BX \rightarrow AX + B$

\rightarrow like replaces like



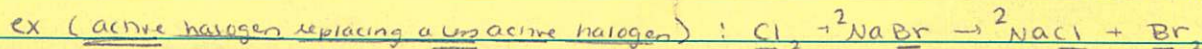
\rightarrow always will produce $H_2 \uparrow$ & a metal salt (any compound ... basically)



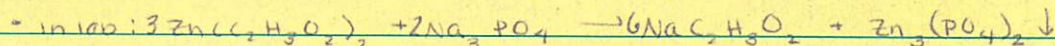
$\rightarrow H_2 \uparrow + \text{hydroxide}$

(HOH)

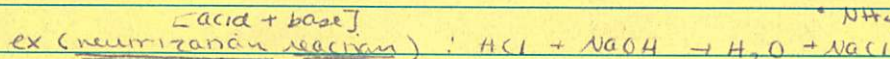
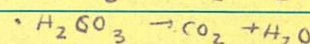
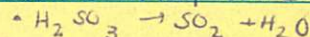
* like replaces like *



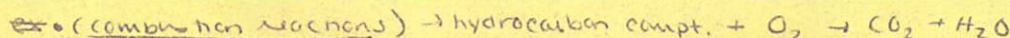
\rightarrow Double Replacement Reactions : $AX + BY \rightarrow AY + BX$



\rightarrow is produced ... they will break down



\rightarrow water + salt



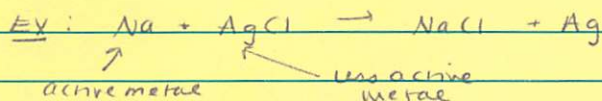
AKA
 precipitate
 reactions

03-01-06

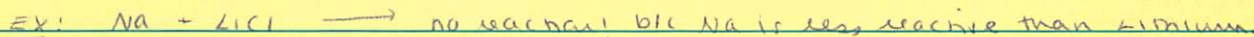
Single Replacement Reactions: do they occur?

* use activity series [on types of reaction handout sheet]

• higher up \Rightarrow the more reactive
[active metal replaces the less active metal]



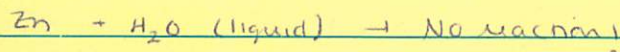
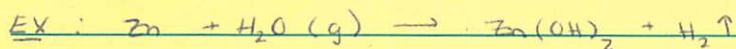
[reaction can not be reversed]



• Active metal replaces H in acids

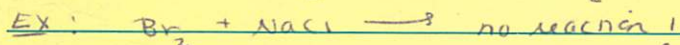
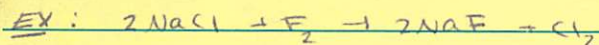


• Active Metal reacts w/ H_2O



Halogen-halogen Single Replacements

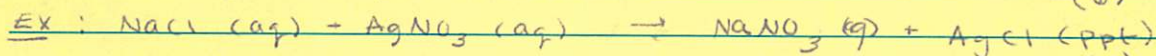
• more reactive halogen replaces less active halogen.



Double Replacement Reaction: do they occur?

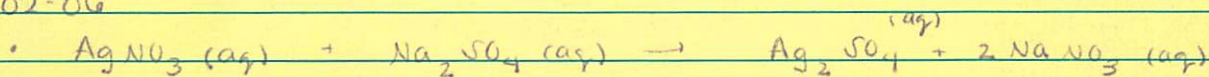
also called ppt reactions \rightarrow a ppt is formed

- combining two aqueous solutions



* crincher sheet: (back of 2nd pg) \rightarrow solubility table (0)

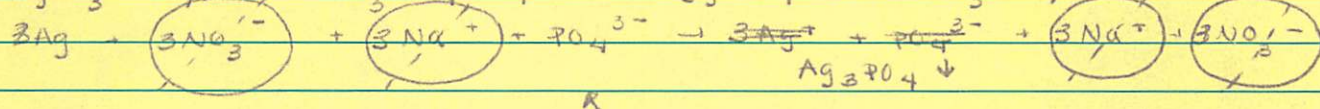
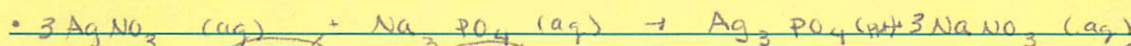
03-02-06



[will NOT happen] \rightarrow no ppt!

\rightarrow no reaction b/c products are soluble.

* When ionic compounds dissolve, they dissociate (break apart) into their respective ions.



R

• an ionic Eqn. shows all reactants & products as ions.

$\textcircled{}$ \rightarrow spectator ions.

• if spectator ions are cancelled \rightarrow Net ionic equation

